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USSR Report

AGRICULTURE

No. 1260



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CONTENTS

MAJOR CROP PROGRESS AND WEATHER REPORTING

Field Preparation for 1981 Crops in RSFSR (PRAVDA, 30 Sep 80; IZVESTIYA, 24 Sep 80).....	1
Field Work Problems in Kurskaya Oblast, by N. Utkin Autumn Plowing Hindered by Poor Organization of Labor, by M. Ovcharov Autumn Field Work Problems in Voronezhskaya Oblast Summarized, by V. Komov	
Farming Paper Reports on Late-October Weather (SEL'SKAYA ZHIZN', 4 Nov 80).....	6
Weather Forecast for November (SEL'SKAYA ZHIZN', 1 Nov 80).....	8
Moldavian Agriculture Minister on Sowing Winter Crops (M. F. Lupashka Interview; SOVETSKAYA MOLDAVIYA, 21 Aug 80)...	10
Estonia Prepares To Sow Winter Crops (SOVETSKAYA ESTONIYA, 5 Sep 80).....	12
Moldavia Fall Sowing Preparations (SOVETSKAYA MOLDAVIYA, 5 Sep 80).....	15
Briefs	
Kurskaya Oblast Autumn Sowing Operations	17
Winter Crop Sowing Commences	17
Winter Crop Sowing Preparations Completed	17
Winter Wheat, Rye Sowings	17
A Fine Tradition	17
Early Autumn Plowing Emphasized	18
Grain Sales to State	18
Orlovskaya Oblast Grain Thrashing	18

Kurskaya Oblast Autumn Sowing Work	18
Khabarovskiy Kray Plowing Operations	18
Talas Valley Sowing	19
Nakhichevanskaya ASSR	19
Sabirabadskiy Rayon, Azerbaijan	19
Lithuania Fall Plowing	19

POST-HARVEST CROP PROCESSING

Drying of High Moisture Seed Grain (F. N. Erk, et al.; <i>TEKHNIKA V SEL'SKOM KHOZYAYSTVE</i> , Aug 80).....	20
Transportation Parameters for Grain of Various Moisture Levels (A. Bernadin, et al.; <i>MUKOMOL'NO-ELEVATORNAYA I KOMBIKORMOVAYA PROMYSHLENNOST'</i> , Aug 80).....	23

AGRO-ECONOMICS AND ORGANIZATION

Role of Private Plot Farming Stressed (G. Shmelev; <i>PRAVDA</i> , 4 Feb 80).....	26
--	----

TILLING AND CROPPING TECHNOLOGY

Shortcomings in Fertilizer Production and Use (V. V. Tokarev, I. A. Potashov; <i>ZEMLEDELIYE</i> , Sep 80).....	31
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MAJOR CROP PROGRESS AND WEATHER REPORTING

FIELD PREPARATION FOR 1981 CROPS IN RSFSR

Field Work Problems in Kurskaya Oblast

Moscow PRAVDA in Russian 30 Sep 80 p 1

[Article by N. Utkin, Kurskaya Oblast: "The Fields Await the Plowmen"]

[Text] The Kolkhoz imeni Frunze in Belovskiy Rayon is known for its high yields. This year, for example, an average of 29.7 quintals of grain per hectare was harvested. More than 300 quintals of sugar beets are obtained from each hectare. Of the complex of agrotechnical measures employed for promoting increased yields from the fields, the chairman of the kolkhoz administration, P. Titov, places special emphasis on autumn plowing carried out during the best periods.

"Those who sow spring crops following spring plowing" stated Fedr Zakharovich, "lose one third of their grain and almost one half of their technical crops. This is why, as early as late August, the machine operators assigned to the two kolkhoz detachments -- each of which has six powerful tractors -- commence preparing the land for the spring crops. This work is presently nearing completion."

In Kurskaya Oblast there are many farms where the importance of timely soil preparation work is clearly understood. Such farms are achieving high yields.

Nevertheless, the oblast on the whole is lagging behind in the carrying out of this important work. By the end of September, of 1.2 million hectares set aside for spring crops, only one half had been plowed. For example, in Kastorenskiy, Gorahechenskiy and some other rayons, autumn plowing has been completed only on one third of the areas and the figure is even less for Cheremisinovskiy Rayon.

What is the problem?

This question summons forth a variety of answers. On some farms the leaders and specialists maintain that the tracts of land are made available too late and on other farms a shortage of tractors is singled out as the cause of the problem. Many tractors are being employed for transporting silage and for tamping down the bulk in the trenches. But this is not the only difficulty.

For example, let us take Pristenskiy Rayon. Today it occupies a leading position in terms of grain crop cropping power and first place in autumn plowing. Nor do the Pristenskiy Rayon workers experience fewer difficulties. Nevertheless, they

succeeded here in procuring the required number of tractors and in organizing their use in two shifts. Initially, it was not possible to achieve an efficient rhythm or to follow a schedule approved by the oblast executive committee. At first the nighttime watch of the plowmen produced very low results -- 270-300 hectares for the rayon. A meeting was held in the rayon party committee for the farm leaders and later -- for middle echelon workers. Discussions were held on how best to intensify control over the work being performed by the machine operators and how to motivate them both morally and from a material standpoint. They began summarizing the results of the competition on a regular basis. And the nighttime output increased by more than twofold.

The rayon headquarters always has operational data on those who are in the lead or those who have fallen behind and require assistance. A young tractor operator, A. Mal'nev, plowed 32 hectares with his Kirovets machine during one shift. The winner of the competition was congratulated upon his success in front of his working comrades and awarded a prize.

However, we repeat once again that this is not the case in all areas. In Cherepishnovskiy Rayon, very little concern is being evidenced for the creation of a reliable foundation for the future harvest. Two hundred and fifty machine operators were sent out from Kursk to assist the local grain growers. However, even this action did not save the situation. On the farms, no concern was displayed for the proper organization of labor and the authorities neglected the work being performed both by their own machine operators and also those sent out to lend assistance. The result -- the last line in the oblast summary.

The proper degree of effort is not being displayed on the fields in Sointsevskiy, Ponyrovskiy, Sovetskij, Zheleznogorskiy and certain other rayons. As a rule, the tractors in these rayons are being employed in one shift and quite often they break down. Despite the fact that the oblast executive committee recommended the creation of teams and detachments in all areas, a preference is being shown on many farms for individual plowmen, the labor of which, as is well known, is more difficult to organize and control.

The differences in the farm indicators are very striking. For example, on 25 September the average output per tractor throughout the oblast was 5.1 hectares and yet in Zheleznogorskiy Rayon -- 2.4 hectares, L'govskiy Rayon -- 2.3 and in Gorahechenskiy Rayon -- 1.3 hectares. Thus it is apparent that many reserves are available for completing the soil preparation work in a timely manner.

Certainly, the situation is aggravated by the fact that a number of the tractors are laid up: no replacement parts or units are available. The suppliers -- the collectives of industrial enterprises throughout the country -- are obligated to supply the Kursk machine operators with these materials. Nevertheless, the principal causes of the falling behind had to do with the fact that much time was spent vacillating between different solutions. The oblast, party and economic organs must exercise control over these problems and the situation will improve. Thus, everything is dependent upon the mood and the skilful organization of labor.

Autumn Plowing Hindered by Poor Organization of Labor

Moscow IZVESTIYA in Russian 24 Sep 80 p 2

[Article by M. Ovcharov, Saratovskaya Oblast]

[Excerpt] But it must be stated that by no means is this work being carried out in this same manner in all areas of Saratovskaya Oblast. By 22 September, autumn plowing had been carried out on 2.3 million hectares -- 500,000 hectares less than the level for last year. When I questioned the agronomists and farm leaders regarding the reasons for this falling behind, I was usually informed that the harvest was delayed by rainfall and this in turn caused the autumn plowing to be postponed to a later period. Here there can be no argument. The unfavorable weather conditions certainly played a role. But it would be incorrect to explain away the problem solely based upon the caprices of nature. For example, let us compare two rayons: Kalininskiy and Lysogorskiy. Here the cropping power of the grain crops this year is 14.7 and 10.3 quintals per hectare respectively. But what concern is being evidenced here for the future grain crop? The farms in Kalininskiy Rayon are completing their autumn plowing, while those in Lysogorskiy Rayon are just finishing up half of their fields. And there is an explanation for this. In Lysogorskiy Rayon, a second shift of machine operators is lacking for almost one half of the Kirovets tractors. What is the result? The personnel work from sunrise to sunset (with the daylight period becoming shorter and shorter) and they perform well despite the fact that their human potential is limited: a machine operator requires an ample amount of rest. This explains why the average daily workload per tractor during single-shift operations is not very great.

"It is my opinion that the problem derives not so much from a shortage of personnel, as is so often mentioned" stated G. Vdovin, a machine operator at the Kolkhoz imeni Kalinin in Lysogorskiy Rayon and a deputy to the rural soviet, "but rather that it is caused by poor organization of labor. It is maintained that it is best to complete the harvest as rapidly as possible and thereafter to turn full attention on the plowing work. But by this time the optimum periods for carrying out the autumn plowing operations may have elapsed.

Concern must be displayed for the seed. Although the quality of the seed is good this year, nevertheless it can generally be said that the amount of seed being procured on farms throughout the oblast is less than for this same date last year. The rainy weather is raising the moisture content of the seed and this means that it must be dried out more thoroughly on the threshing floors. But good preparations have not been made for doing this in all areas.

During the autumn there is much work to be accomplished and only a limited amount of time in which to do so. Much work still remains to be carried out. The crop residues must be removed from the fields quickly and without delay and at the same time the winter crops must be sown and the autumn plowing carried out. Nor should there be any abatement in the amount of effort directed towards procuring feed during this period. At the present time, the best farms will be those which carry out their work as part of an overall complex of operations and in keeping with a precise schedule. In this manner, they will create a reliable foundation for next year's harvest and for carrying out the socialist obligations undertaken in honor of the 26th CPSU Congress.

Autumn Field Work Problems in Voronezhskaya Oblast Summarized

Moscow IZVESTIYA in Russian 24 Sep 80 p 2

[Article by V. Komov, Voronezhskaya Oblast: "When the Equipment Operates at Maximum Capability"]

[Excerpts] The autumn period always demands a great amount of work from the farmers. Nor is this year an exception. The weather has introduced considerable corrections into the plans and schedules and many operations are in conflict with one another. It would appear that a higher degree of organization is required and also faultless efficiency on all of the tracts without exception.

Certainly, nobody is guaranteed against surprises occurring. The weather this year has been very capricious. Thus the required rhythm must be achieved immediately and no work postponed until later. Indeed, last year the oblast's farms could have laid in twice as much hay, haylage and spring crop seed and applied one and a half million more tons of organic fertilizer.

But here we are confronted by the system of "overlapping agricultural lands." In Bovrovskiy, Kalacheyevskiy and Ol'khovatskiy rayons the plan for procuring organic fertilizer was over-fulfilled and in Khokhol'skiy and Kashirskiy rayons -- fulfilled by barely 50 percent. It should be noted in this regard that not all of the workers attached to the oblast's Sel'khozkhimiya Association and its subunits in the various areas are zealously employing their equipment for transporting the organic fertilizer, nor are they performing in the role of industrious and persistent organizers of this most important work.

There is no need for proving that in the final analysis the situation is affected not so much by the weather as it is by the level of organizational and political work, the quality of management and the degree of equipment maneuverability. Actually, everyone is aware that autumn plowing serves as a guarantee that stable yields will be obtained. Then why did the farms in Gribovskiy, Semilukskiy and Khokhol'skiy rayons fall behind the kolkhozes and sovkhoses in Petropavlovskiy, Verkhnemamonovskiy and Kalacheyevskiy rayons in their autumn preparation of the soil?

Of 2 million hectares to be completed, autumn plowing on the whole has been carried out on only 500 hectares throughout the oblast. Moreover, at the present time the experience of leading workers underscores the need for all units to be operated on a double-shift and highly productive basis, for the powerful tractors to be employed in a skilful manner (and there are almost 2,500 of them in the oblast) and for improvements to be realized in the technical servicing of the machines. When this is accomplished, in the opinion of the specialists, the workers in Voronezhskaya Oblast will be able to carry out autumn plowing on 35,000-40,000 hectares in a day's time, instead of just 20,000 hectares. The oblast party committee and the oblast executive committee are undertaking urgent measures aimed at ensuring that this possibility is realized.

It is generally known that the harvesting of sugar beets is a laborious process. Here in our oblast this crop is planted on one quarter of a million hectares. But adequate equipment is available this year and this is not the first year that the best beet growers are harvesting this most important crop in just 25-30 days. At the present time, there are 568 harvesting-transport complexes in operation out on the fields. The best farms are not allowing a pause to ensue between the digging up and shipping of the roots. The work is being carried out in keeping with the principle: roots for the plant and the haulm for the farms.

However, the rates are still far from those required by the situation. The crop has been dug up on only 40,000 hectares. And once again the differences between a number of rayons are alarming. For example, the farms in Talovskiy, Vorob'yevskiy and Kalacheyevskiy rayons have already harvested almost one third of their plantations, whereas those in Paninskii and Kantemirovskiy rayons have fulfilled their plans by only 5-6 percent. It is appropriate to mention that on more than one occasion the workers in Voronezhskaya Oblast demonstrated a degree of expertise during the best harvesting season. At the present time however, the tempo is clearly inadequate.

Certainly, we cannot ignore the fact that one third of the motor vehicles to be obtained from other oblasts have not yet arrived in Voronezhskaya Oblast. But this is not the principal problem. Reports are being received indicating that the transport vehicles are not being employed in an efficient manner on some of the farms.

At the present time, it would be wrong to merely sit and await the arrival of good weather. The volume of work to be carried out is great. It bears mentioning that the workers in Voronezhskaya Oblast must still harvest 240,000 hectares of sunflowers, more than 10,000 hectares of potatoes and a large quantity of corn.

An autumn day and the autumn fields impose many strict demands. Each hour of time is valued highly. The example set by leading workers in the socialist competition teaches us that all of the autumn work can and must be carried out in a manner such that the final results turn out to be the best and the five-year plan is completed in a worthy manner.

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CSO: 1824

MAJOR CROP PROGRESS AND WEATHER REPORTING

FARMING PAPER REPORTS ON LATE-OCTOBER WEATHER

L10071145 MOSCOW SEL'SKAYA ZHIZN' in Russian 4 Nov 80 p 1

[Agrometeorological S. Malikova "USSR Hydrometeorological Center Report":
"The Weather and the Crops"]

[Text] Average air temperatures over the past 10 days have been near normal on the majority of the USSR's European territory. At the end of the 10 days the weather grew colder, particularly in the northern part.

Precipitation in the form of rain (snow and sleet in the northern regions) occurred in most areas on 4-8 days. It was heaviest (11-30mm, in places 31-70mm) in the Baltic republics, Belorussia, the northwest, central, Central Chernozem, and Volga-Vyatka regions, in the northern oblasts of the Volga and Ural regions, most of Krasnodarskiy and Stavropolskiy krais and the northern oblasts of the Ukraine. Over the remaining territory precipitation was slight (under 10mm) or did not occur at all.

Snow cover has been established over the north of the USSR's European territory. Its borderline runs through Riga, Kalinin, Ivanovo, Glazov (Udmurtskaya ASSR) and Kudymkar (Permskaya Oblast). Its depth in Karelskaya ASSR, the extreme east of Novgorodskaya Oblast, the north of Kalininskaya and Yaroslavskaya oblasts, Kostromskaya Oblast and most of Kirovskaya Oblast was 11-16cm, and in places in the northwest of Permskaya Oblast 16-21cm. Snow fell on 2-3 November in Moldavia, the southwestern and northeastern oblasts of the Ukraine, and the south of the Central Chernozem region. Its depth was 1-5cm, and in places in the south of Odesskaya Oblast and in Sumskaya and Belgorodskaya oblasts 15-20cm.

On the USSR's European territory north of a line through Riga, Kalinin, Ivanovo, Glazov and Kudymkar, winter grain crops were in a state of dormancy under the snow cover which formed at the end of the last 10-day period. In this zone the winter crops have stopped vegetation mainly at the tillering phase. In regions further south, up to a line running through Vilnyus, Minsk, Kursk and Saratov, winter crop vegetation was observed only on some days. Conditions for the first hardening phase were satisfactory.

Mild weather persisted for most of the past 10 days in Ukraine, Moldavia and the Central Caucasus, which favored the rooting, growth and development of winter grain crops. Winter crops sown in early October, or in the northernmost

regions of this territory from 15 through 25 September, had begun tillering by the end of the 10 days. Earliest sowings of winter wheat had completed the tillering stage.

It was mild in the Transcaucasus. Average air temperatures were close to normal. Conditions for the growth and development of winter grain crops were favorable.

Moderately mild, mostly dry weather persisted in the arable regions of West Siberia and Kazakhstan. Average air temperatures were 4-6 degrees above normal in West Siberia and the northern half of Kazakhstan. Over the remainder of Kazakhstan's territory air temperatures were 2-3 degrees higher than usual. In West Siberia grain crop vegetation ceased. In East Siberia air temperatures were close to normal. Precipitation was under 5mm over most of the territory.

Mild weather persisted in the Central Asian Republics. Average air temperatures over the 10 days were 10-14 degrees (1-3 degrees above normal). The weather was dry over most of the territory or else precipitation did not exceed 10mm on 1-2 days. Since 22 October frosts have been frequent almost everywhere in Central Asia. The cotton harvest is continuing and the harvesting of cotton stems and the plowing of land for winter fallow have begun on cleared fields. Conditions for field work were mostly favorable.

CSO: 1824

MAJOR CROP PROGRESS AND WEATHER REPORTING

WEATHER FORECAST FOR NOVEMBER

LDO51319 Moscow SP 'SKAYA ZHIZN' in Russian 1 Nov 80 p 4

[Unattributed "USSR Hydrometeorological Center" weather forecast for November: "A Month of Contrasts"]

[Text] On the European territory of the Soviet Union, November is expected to be close to normal in the Central Zone and mild in southern oblasts; only in extreme northeast regions of the European territory is the average temperature for November expected to be below normal.

In the Karelskaya ASSR and Arkhangel'skaya and Murmanskaya oblasts temperatures will be minus 8-13 at night and minus 3-8 degrees by day. The highest temperatures (minus 2 to plus 3 at night, plus 3-8 degrees by day) are expected in the first 10 days of the month and the lowest--13-18 degrees of frost at night and 8-13 degrees of frost by day--at certain times in the third 10-day period. Frequent precipitation is expected during the month.

In Leningradskaya, Vologodskaya, Pskovskaya and Novgorodskaya oblasts temperatures will vary between 2-7 degrees of frost and 10-15 degrees of frost at night and between minus 3-plus 2 and minus 3-8 by day. Frequent precipitation is expected during the month.

In the Central and Central Chernozen regions temperatures will vary between minus 4 to plus 2 and 7-13 degrees of frost at night, and between minus 1 to plus 5 and minus 2-7 degrees by day. Frequent precipitation is expected during the month.

In the Baltic republics and Belorussia the month will begin with cold weather, then in the first 10-day period air temperatures will rise to 3-8 degrees at night and 6-11 degrees by day, thereafter they will be minus 2-7 (at times minus 6-11) at night and minus 3 to plus 2 by day. Precipitation during the month will be normal.

In the Ukraine and Moldavia the beginning of the month will be cold. The temperatures in the north and east of the Ukraine will be minus 3-8 at night, then on the mildest of the first 10 days daytime temperatures could rise to 8-13 degrees, and 15 degrees in places. In the second and third 10-day periods temperatures will fall some nights to 6-11 degrees of frost, and by day to zero to minus 5, and in the southern oblasts and in Moldavia they will fall to minus 2-7 by night and zero to plus 5 by day. Frequent precipitation is possible.

In the Upper and Middle Volga air temperatures will be minus 3 to plus 1 at night, falling to minus 11 at times, and [word indistinct] degrees by day. In the second and third 10-day periods at times temperatures could fall to 10-15 degrees of frost and at times 12-17 degrees of frost at night, and minus 3-8 degrees by day. Precipitation is most likely in the first half of the month.

On the lower Volga temperatures will be from zero to plus 5 at night and 3-10 degrees by day, and in the second half of the month periods of cold weather are expected (minus 5-10 by night, minus 3 to plus 2 by day). Precipitation is most likely in the first half of the month.

In the central and southern Urals in the first 10 days of the month temperatures will be minus 1 to plus 4 at night and plus 4-8 by day. In the second and third 10-day periods there will be 10-15 degrees of frost at night and 6-11 degrees of frost by day, and at times it will be from zero to minus 5 at night and from zero to plus 3 by day. Frequent precipitation is likely during the month.

In the southern regions of Western Siberia in the first half of the month temperatures could rise to 1-6 degrees by day, and the second half of the month is expected to be significantly colder, with night frosts reaching minus 20-25 degrees and minus 30 degrees in places. Precipitation is most likely in the first and second 10-day periods.

In the Kazakh SSR on the warmest days temperatures could vary between 1-6 degrees in the northern regions of the republic and 15-20 degrees in southern regions. During cold spells temperatures could fall to 20-25 degrees of frost at night and 12-17 degrees of frost by day, and in southern regions minus 8-15 at night and minus 3 to plus 2 by day. Precipitation is expected mainly in the first and second 10-day periods.

In the Central Asian Republics frequent fluctuations in temperature are expected. Over most of the territory they will vary between minus 2 to plus 3 and plus 8-13 at night, and between 13-16 and 20-25 degrees by day. In the second half of the month cold spells are possible, with night temperatures falling to zero to minus 5, and 5-10 degrees of frost in Uzbekistan and Kirgizia. Precipitation is expected in the first half of the month.

MAJOR CROP PROGRESS AND WEATHER FORECASTING

MOLDAVIAN AGRICULTURE MINISTER ON SOWING WINTER CROPS

Moscow SOVETSKAYA MOLDAVIYA in Russian 21 Aug 80 p 2

[Interview with Moldavian Minister of Agriculture M. F. Lupashka: "Concern for the Winter Fields"]

[Text] The agitation over the first period of heavy harvest work has barely quieted down, and farmers are already concerned about tomorrow's grain: the period of large-scale sowing of winter crops is at hand. On the eve of this busy period, an ATTEM correspondent interviewed the Moldavian SSR Minister of Agriculture, M. F. Lupashka.

[Question] What determines the current strategy and tactics of grain growers?

[Answer] Very little time remains to the sowers to prepare for this important fall campaign: the late spring delayed plant development by two weeks, and the unstable, rainy weather stretched out the grain harvest. At the same time, the optimum times for sowing are an objective factor which cannot be postponed. Under these conditions, comprehensive work to prepare the soil for sowing and the efficient use of those opportunities invested in the new "mechanization associations" form of operating the machine-tractor fleet take on exceptionally important significance.

Abundant precipitation caused farmers quite a bit of trouble, but it eliminated the usual problem here of insufficient moisture in the layer of soil sown. The task now is to conserve as much of that moisture as we can. In order to do this, when harvesting sunflowers and corn we must try to reduce to a minimum the number of passes equipment makes in the fields by organizing the work correctly. We should also combine intelligently the use of moldboard plowing and working the soil without plows.

[Question] What about this year is most significant?

[Answer] It is important that all elements of the technology for cultivating modern varieties of winter wheat be strictly followed with consideration of their biological features and the weather conditions which have developed. It is necessary that predecessors be properly selected and that varieties be distributed intelligently. This year, when the gap between harvesting and sowing has been cut to a minimum, it is exceptionally important that organic and mineral fertilizers be applied to the fields properly. Scientific and practical data bear out that 30-40 percent of the total grain yield increment is obtained through fertilizer application. Every

quintal of actual weight of nitrogen, phosphorous and potassium is recompensed by 6-8 quintals of grain, and the level of profitability of fertilizers applied reaches 90 percent. At the present stage of farming intensification, each variety needs its own system of fertilizer application. Unfortunately, this is not always taken into account in practice, simplified technology is permitted, and as a result, intensive types of acclimatized varieties do not always yield the maximum harvests possible.

Moreover, it must not be forgotten that fertilizers are a real factor in improving output quality, in helping increase grain gluten content. Therefore, we need to be thinking now about high-test grain. Definite experience has been accumulated in the republic in raising strong, valuable varieties of wheat. And even now, in spite of the late plant regeneration, state storehouses have already received, as of today, about 70,000 tons of high-quality wheat. However, there is every possibility that we will be able to improve this indicator sharply next year.

[Question] What time segment is meant by the words "optimum sowing periods"?

[Answer] Actually, we are now on the threshold of the sowing; the season opens with sowing the new Perko fodder grass. Sown in late August, after the 20th, it will be yielding 200 or more quintals of bulk per hectare by late October and early November, and after wintering will again bring an equally bountiful harvest in April. Farmers have begun sowing rye and rape to be used as feed. But the bulk of the sowing should be begun on 5-10 September and finished before the end of the month, because the so-called risk periods begin after that.

On the threshold of the intensive sowing of winter crops, the republic Ministry of Agriculture and the Moldavian SSR Kolkhoz Council have been holding zonal seminars. Scientists, representatives of soviet organs, chairmen and specialists from mechanization associations and farm chief agronomists and engineers have once again jointly thought through the organization of up-coming work aimed at increasing grain production. Conducting the autumn sowing well and at the proper time will serve as a reliable basis for gathering large harvests in the first year of the 11th Five-Year Plan.

11032

CSO: 1824

MAJOR CROP PROGRESS AND WEATHER FORECASTING

ESTONIA PREPARES TO SOW WINTER CROPS

Edits SOVETSKAYA ESTONIYA in Russian 5 Sep 80 p 1

[Text] Republic farmers have developed widely socialist competition for a worthy greeting to the 26th CPSU Congress. The additional socialist obligations assumed outline concrete frontiers in terms of above-plan deliveries of various type of farm output to the state. Thus, the collective of Vyaymelaskiy Sovkhoz-Tekhnikum decided to sell the state an additional 150 tons of grain and 450 tons of potatoes.

The harvest is proceeding apace on grain farms of Khar'yuskiy, Khiumaaskiy, King-Isaepakiy and other rayons. "Aruxyula" kolkhoz and the kolkhoz imeni Lauristin, Khar'yuskiy Rayon, the "Ennaste," Khiumaaskiy Rayon, the "Kiyr," Paydeeskiy Rayon, and "Kakhala," "Munamyae" and "Pyarnu" sovkhoses have coped with the harvest.

At the same time, rural laborers are displaying particular concern for creating a reliable basis for next year's harvest, it being the first year of the new five-year plan. The winter sowing is an important stage en route to this.

The winter sowing is the most important component in the struggle for the harvest. Everything about it is important -- harvesting predecessors quickly, readying the soil well and at the proper time, applying fertilizers generously and sowing high-quality seed.

The winter fields are important not just because they provide us with grain for bread. Peasants have always considered it a kind of insurance: winter-sown crops endure spring and summer droughts better and yield harvests which are quite large and stable. Expanding the area planted to winter crops relieves somewhat the strain during spring field work. In view of the great potential of winter-sown crops, experienced grain growers are trying to expand that area and consider winter-sown crops a significant and reliable reserve for increasing the harvest.

Thus, in spite of difficulties in harvesting rye, difficulties which caused a great deal of lodging, republic kolkhozes and sovkhoses threshed an average of 27.3 quintals per hectare this year. The average rye harvest on farms of Paydeeskiy Rayon was 31.4 q/ha, on sovkhoses of the scientific research institutes -- 30.4 q/ha, and on sovkhoses in Khar'yuskiy, Vygevaskiy and Rakvereskiy rayons -- upwards of 29 q/ha.

As of 1 September, 96 percent of the planned area had been plowed for winter crops. If it is borne in mind that the optimum time for sowing winter crops here in our republic is the first 10-day period of September, this result cannot be considered

satisfactory. Based on many years of observation, confirmed in experiments by scientists, the soil needs two weeks to settle between plowing and sowing.

Soil preparation is as important as the time of actual plowing. Those farms which use heavy, long-base levelers to even out fields on which winter crops are to be sown are acting correctly. This facilitates distributing seed evenly by depth and thus reduces losses. It is appropriate in low spots to cut furrows with potato cultivators before or after the sowing so excess water can run off.

In previous years, the shortage of seed, and especially of high-grade seed, has caused serious difficulties in sowing winter crops. "According to specialists," Comrade L. I. Brezhnev said at the 25th CPSU Congress, "well-organized, modern seed production can raise yields by at least 20 percent, which means tens of millions of tons more grain and other agricultural output."

The republic now has every opportunity of using only high-quality seed material in sowing winter crops. According to Estonian SSR Central Statistical Administration data, winter crop seed reserves as of 1 September were 108 percent of planned. The most seed has been procured on farms of Kingiseppskiy, Rakvereskiy and Kihyumaavskiy rayons -- 135, 147 and 144 percent of planned, respectively.

At the same time, kolkhoses and sovkhoses of Pyarnuskiy, Pylvaskiy, Valgaskiy and Vyruskiy rayons are experiencing a critical shortage of seed. Thus, seed reserves are only 45 percent of the needed amount in Pyarnuskiy Rayon. The Estonian SSR Ministry of Agriculture and the rayon agricultural administrations must redistribute seed stocks as quickly as possible so that each field designated for winter-sown crops will receive sufficient high-grade seed.

The necessary quantities of mineral and organic fertilizers are not being applied to the soil everywhere; it is sometimes forgotten that scientifically substantiated fertilizer application is a reliable way of increasing yields. In this regard, their intelligent use not only increases yields, but also improves the ability of winter crops to weather the winter.

One example of concern for next year's harvest is seen in farmers of "Lyuganuze" kolkhos, Kokhtla-Yarveskiy Rayon, and "Tyuri" model-support sovkhos, where winter crop sowing is already complete. Nearly half the planned area has been sown in Kokhtla-Yarveskiy Rayon and the sowing is being done successfully on farms of Rakvereskiy Rayon.

At the start of this week, 24,500 hectares in the republic was sown to winter grain crops. That is only 23 percent of the winter-crop sowing plan. Such tempo is clearly inadequate. Sowing is unsatisfactory on farms of Pylvaskiy and Valgaskiy rayons. The attitude towards sowing winter crops on farms of Kingiseppskiy and Kihyumaavskiy rayons is perplexing. Both these rayons are leaders in grain harvesting. That means the fields are freed for other uses earlier here and there are opportunities for maneuvering machine-operator personnel; there is sufficient winter-crop seed. Nonetheless, as of 1 September the plan for sowing winter crops had been met by only 13 percent in Kihyumaav and by only 11 percent in Saaremaa.

Time is pressing for others besides combine operators; it is pressing for sowers. The optimum periods for distributing winter crops are passing. Party rayon committees and rayispolkoms must demand that farm leaders take effective steps to carry

out the plan for sowing winter crops in the very near future. Kolkhoz and sovkhoz party organizations are obligated to do the autumn sowing quickly and precisely. Their task is to help leaders and specialists deploy people correctly and to organize socialist competition in all sowing sectors.

Concern for the winter fields is concern for a good harvest in the first year of the 11th Five-Year Plan.

11052

CSO: 1026

MAJOR CROP PROGRESS AND WEATHER FORECASTING

MOLDAVIA FALL SOWING PREPARATIONS

Kishinev SOVETSKAYA MOLDAVIYA in Russian 5 Sep 80 p 1

[Text] These days, republic agricultural laborers have many concerns. The period of large-scale harvesting of late-summer crops has begun, and the tempo of harvesting fruit, vegetables and tobacco and of procuring feed is picking up. Farmers are making every effort to gather the harvest grown quickly and at the optimum times, to meet their obligations to the state with honor, and to greet the 26th CPSU Congress with honor.

One of the most important places in the broad complex of urgent field work is given to the creation of a firm basis for the future harvest. "Sowing more winter crops at the proper time, scattering quality seed and readying the soil for next year's harvest -- these are also pressing tasks, comrades," said Comrade L. I. Brezhnev at the anniversary celebrations in Alma-Ata.

Grain production is a shock-work sector for rural communists, all kolkhoz members and sovkhos workers. It is necessary to raise farming standards, improve the sown area structure and energetically strive for growth in grain yields in every way possible.

Winter crops play a large role in resolving the tasks of increasing gross grain harvests. They are, due to their biological features, capable of using soil moisture reserves better than spring-sown crops and of ensuring rich yields. A full return from winter fields depends on many factors, foremost on the time and quality of soil preparation and sowing for winter crops. That is why it is very important to do everything possible to carry out this important work at the best agrotechnical times and with high quality. In order to do this, especially precise calculations and equipment maneuvering and the ability to mobilize people for selfless labor is demanded of farm leaders, engineering services and party organizations in order that the broad complex of field work ensures the prompt harvesting of late-summer crops and preparing the soil for next year's harvest at the proper time.

Machine operators of Vulkaneshtskiy, Kagul'skiy, Bessarabskiy, Dubossarskiy and Kriulyanakiy rayons are actively preparing the foundation for the next harvest. On a majority of farms here, both heavy and wheeled tractors, organized into two shifts, are concentrated on soil preparation. Machine operators of detachment No 3 serving the Kolkhoz imeni Lenin in Kagul'skiy Rayon are using equipment for these types of work in a highly productive manner. Here, all technological operations on winter fields are carried out as a single complex. After the grain has been threshed, the straw is chopped and the chaff is gathered and hauled to feed lots. After that, the soil is disked, fertilizers are applied, and the soil is readied for the next harvest.

Under the conditions which have evolved, soil preparation for winter crops is now the most pressing task everywhere. Optimum periods for sowing have already begun, but the land on which the winter crops are to be sown is in many rayons either not cleared of predecessors and stubble or has not been worked for sowing. Soil preparation for winter crops has dragged out on many farms in Oknitskiy, Rezinakiy, Lazovskiy and other rayons. All this might be reflected in sowing schedules and, in the end, in the future harvest.

It is the duty of farm leaders, engineering-technical services and all agricultural agencies to do everything possible to overcome the lag. The maximum number of tractors should be allocated for soil preparation; we should ensure that they operate around the clock in the furrows and that every condition is available for the highly productive labor of the machine operators.

Particular attention should be paid to growing strong varieties of wheat. In order to do this, we need to allocate the best predecessors for such sowings, to apply the necessary amounts of phosphate-potassium fertilizers during basic soil cultivation, and to prepare the soil and sow using select seed at the best times. All this, in a complex with other agrotechnical measures, will permit the formation of high-quality grain in the bread fields. Many farms in Slobodskiy, Orgeyevskiy, Rybnitskiy and other rayons have accumulated a great deal of experience in growing strong varieties of wheat. It is the task of the agronomy services to study it attentively and, with consideration of the recommendations of science, implement an entire complex of measures to increase yields and improve the quality of the output grown.

One of the largest reserves for increasing the yield from each hectare of winter fields is in sowing graded, first-class seed. The arsenal of our grain growers contains many remarkable varieties of wheat which can provide rich harvests, given good soil preparation. But in order that they manifest all they are capable of, they must be brought up to sowing conditions in advance. Modern varieties are very sensitive to time of sowing. The sowing must be done at the optimum time and treated seed must be used. That guarantees that plants will be protected against diseases and pests, one of the requisites for rich harvests.

In our republic, a considerable portion of the winter crops will follow late predecessors, primarily sunflower and grain or silage corn, since sowing winter crops on the same land for more than two years in a row leads to a reduction in yields. That is why it is necessary first of all to gather these crops on sectors intended for winter crops and to prepare the soil for next year's harvest without delay. In this regard, it is important to organize things in such a way that there will be no gap between harvesting late crops, applying fertilizers, preparing the soil and sowing winter crops. In performing each of these jobs, active use should be made of the recommendations of scientists and of leading winter-crop cultivation experience.

Many important tasks face farm and association party organizations. They are called upon, using the experience of the Ryshkanskiy raykom which was approved by the Moldavian Communist Party Central Committee, to subordinate all means of mass-political work to solving the most important tasks, those of conducting the second harvest in an exemplary manner, harvesting fruit, grapes and tobacco and sowing winter crops. The creation of conditions necessary for highly productive labor for machine operators and all participants in the battle for this year's and next year's harvests, broad dissemination of leading experience and the flexible use of moral and material incentives will enable them to harvest late crops promptly, meet their obligations to the state, lay a firm foundation for the future harvest, and greet the 26th Congress of our native party in a worthy manner.

MAJOR CROP PROGRESS AND WEATHER REPORTING

BRIEFS

KURSKAYA OBLAST AUTUMN SOWING OPERATIONS--Kursk--Autumn sowing work has commenced out on the oblast's fields. With powerful units of equipment at their disposal, the oblast's kolkhozes and sovkhoses are sowing 30,000-35,000 hectares on a daily basis. [Text] [Moscow TRUD in Russian 29 Aug 80 p 1] 7026

WINTER CROP SOWING COMMENCES--Kuybyshev--The sowing of winter crops has commenced out on the oblast's fields. They must be sown on an area of 390,000 hectares. For this purpose, use is being made of seed for the wheat varieties Mironovskaya-808 and Al'bikum-114 and also for the rye variety Saratovskaya-4. In the Kuybyshev region of the Volga River area, where droughts often occur, the farmers consider the winter crops to be a source for obtaining a guaranteed increase in grain production. This year a considerable portion of the winter crops are being sown following clean fallow. They have been given a good top dressing of organic and mineral fertilizers. [Text] [Moscow GUDOK in Russian 10 Aug 80 p 1] 7026

WINTER CROP SOWING PREPARATIONS COMPLETED--Elista--The farmers in Yashaltinskiy Rayon have completed their preparation of early bastard fallow for the sowing of winter crops. The tempo of the work was accelerated as a result of the efficient organization of the operations. All of the winter fields were prepared using a technology deemed to be progressive for the arid steppe regions -- sweeps, heavy shallow plows and rollers, with the soil being given a mineral fertilizer dressing. This year, winter crops will be grown on more than 400,000 hectares in the Kalmykская ASSR. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 27 Aug 80 p 1] 7026

WINTER WHEAT, RYE SOWINGS--Volgograd, 6 Sep--The oblast's farmers have commenced their mass sowing of winter wheat and rye. Approximately 1,000 specialized detachments and teams are in operation out on the fields. A record number of hectares, 1.7 million, have been set aside throughout the oblast for the growing of winter crops. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 7 Sep 80 p 1] 7026

A PINE TRADITION--Stavropol'--The machine operators in Grachevskiy Rayon were the first in the Stavropol' Steppe region to carry out early and productive plowing in behalf of all of the winter grain crops. During last year's harvest season, the local kolkhozes and sovkhoses obtained the highest wheat and barley yields -- 29 quintals per hectare of planting -- among all of the steppe farms in the kray and they over-fulfilled their task for supplying the state's granaries with grain by a factor of 1.5. The grain growers in Grachevskiy Rayon follow a tradition of planting grain crops only on land that was plowed early, is free of weeds and has a high

moisture content. The farmers in Krasnogvardeyskiy, Shpakovski and Aleksandrovskiy rayons are preparing their soil for September sowing operations at a rapid tempo. [Text] [Moscow SOVETSKAYA ROSSIYA and SEL'SKAYA ZHIZN' in Russian 29 Aug 80 p 1] 7026

EARLY AUTUMN PLOWING EMPHASIZED--Tyumen', 15 Sep--Early autumn plowing in Siberia, under conditions involving the accumulation of nutritional elements by the plants, is almost the equal of bastard fallow. The greatest amount of this type of plowing in the oblast was carried out by the farmers in Isatskiy Rayon -- more than 17,000 hectares, or one fourth of the entire area to be used for spring crops. The farms are continuing their plowing work at a high tempo: the daily increase in plowing carried out is 1,500 hectares. Use of the Ipatovo method for organizing labor is proving to be of great assistance to the farms in Isatskiy Rayon with regard to carrying out the autumn work as part of an overall complex of operations. The straw is being collected immediately in the wake of the combines and specialized teams. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 16 Sep 80 p 2] 7026

GRAIN SALES TO STATE--Kurgan--The machine operators at the Zaural'ye Kolkhoz were the first in Yurgamyshskiy Rayon to commence threshing their windrows and selling grain to the state. More than one half of the grain crops have already been cut down here. A high level of equipment productivity is directly dependent upon well organized services being provided by the repair and preventive maintenance service. The harvesting complexes have mobile workshops. Even complicated repair operations are being carried out directly out on the fields and at any time of day. At the present time, there are 47 mobile workshops in operation in Kurganskaya Oblast, attached to harvesting-transport complexes. The collectives of Sel'khoztekhnika branches and industrial enterprises have provided assistance in equipping these workshops. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 29 Aug 80 p 1] 7026

ORLOVSKAYA OBLAST GRAIN THRASHING--Orel--Notwithstanding the poor weather, the machine operators on a majority of the farms are achieving high indicators in the gleanings of windrows. For the oblast on the whole, grain is presently being threshed at the rate of up to 20,000 hectares daily. Assistance is being furnished in this regard by mobile combine groups. They are being transferred to those sectors where the windrows are drying out more rapidly. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 29 Aug 80 p 1] 7026

KURSKAYA OBLAST AUTUMN SOWING WORK--Kursk--Autumn sowing operations have commenced out on the oblast's fields. With powerful equipment at their disposal, the oblast's kolkhozes and sovkhoses are sowing 50,000-55,000 hectares daily. This year, winter crops are being planted on 580,000 hectares in Kurskaya Oblast. The task has been assigned of completing the sowing work during the early part of September. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 29 Aug 80 p 1] 7026

KHABAROVSKIY KRAY PLOWING OPERATIONS--Khabarovsk, 2 Sep--The kray's machine operators have successfully coped with their plan for early autumn plowing during the month of August. On a majority of the farms in Smidovichskiy, Leninskiy and Komsomol'skiy rayons, practically all of the tracts of land have been prepared for next year's harvest, following the harvesting of the grain crops and annual grasses. The plowing detachments have shifted over to the corn fields. They are carrying out their autumn plowing work in the wake of the silage harvesting combines. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 3 Sep 80 p 1] 7026

TALAS VALLEY SOWING--Frunze--Talas Valley farmers began sowing winter crops yesterday. [Text] [Moscow TRUD in Russian 29 Aug 80 p 1] 11052

NAKHICHEVANSKAYA ASSR--Nakhichevan', 9 Aug 80 (SEL'SKAYA ZHIZN' foreign correspondent S. Kengerli)--The fields again resound with the roar of tractors. Machine operators of the republic are preparing the soil for winter crops. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 10 Aug 80 p 1] 11052

SABIRABADSKIY RAYON, AZERBAIJAN--Baku--Farms of Sabirabadskiy Rayon in Azerbaijan have finished preparing grain fields for the fall sowing. Special links have plowed the fields and laid down fertilizers. Local farmers have done presowing soil cultivation in exemplary fashion on more than 160,000 ha, or one-third of the grain field area in Azerbaijan. [Text] [Moscow GUDOK in Russian 1 Sep 80 p 1] 11052

LITHUANIA FALL PLOWING--Vilnius--The bad fall weather did not slow the rate of preparation for fall plowing in Lithuania. Kolkhozes and sovkhoses have plowed more than 500,000 ha, half the land set aside for spring crops. The republic "Harvest 81" contest facilitated this. Winners in the first stage were machine operators in Shalinsky Rayon. They did the fall plowing at the agrotechnically best times. The jury took special note of the fact that the soil here is all levelled and rolled, which ensures that equipment will be used very productively in the spring sowing. The second stage of the contest has begun; its goal is preparing the seed in exemplary fashion. The contest will end on 1 March with a review of equipment readiness to go out into the fields. [Text] [Moscow TRUD in Russian 10 Oct 80 p 1] 11052

CSO: 1824

POST-HARVEST CROP PROCESSING

UDC 664.723

DRYING OF HIGH MOISTURE SEED GRAIN

Moscow TEKHNIKA V SEL'SKOM KHOZYAYSTVE in Russian No 8, Aug 80 pp 12-13

[Article by F. N. Erk, A. Ye. Ivanov, N. F. Bol'shakov; candidates of technical sciences, NIPTIMESKH of Non-Chernozem Zone, RSFSR]

[Text] Specialists of seed production entertain contradictory ideas concerning ways and means of drying seed grain. In many farms they favor construction of home-made driers instead of correct use of existing factory-made driers. This leads to needless expenditure of labor, funds and metal.

The experience of a number of the seed production farms showed that seed grain may be dried with the use of any of the industrially manufactured grain driers.

The technique of post-harvest seed grain processing depends on the seeds' moisture. If, during harvesting, the moisture does not exceed 20 percent, seed can be dried in batch processing by a single passing through a drier. Such grain becomes free-flowing, is well storable in ventilated bins, and even on asphalt, with periodic shoveling.

Decrease in moisture of the seed grain should not exceed 6 percent per pass. If its moisture is 22 percent, it is advisable to combine preliminary drying by 2-3 percent in a bin or on platforms with forced ventilation by atmospheric or heated air, with subsequent drying in the driers. In the presence of higher moisture the seed grain should be subjected to intermediary tempering in forced ventilation bins between two passes through a drier.

In employing such technique, the grain after preliminary cleaning is passed through the drier where it is dried by 4-5 percent and, by-passing the cooling column, is channelled into a bin. On being blown through with atmospheric air it is dried there by another 1-2 percent. At the end of the day, when the grain ceases to arrive in the barn from combine harvesters, the grain already dried somewhat in bins is passed again through the drier.

In the "Silayna" kolkhos, Dobel'skiy Rayon, Latvian SSR, a drying center was built which operates in accordance with the technique described. It is equipped with ventilation bins to handle 400 tons of grain from combine harvesters, two SZSB-8.0 drum driers, and 600-ton capacity bins to temper the dried grain.

During the post-harvest processing of the seed grain special attention should be given to its ripening. As a rule, in years with unfavorable weather conditions the grain crops do not ripen completely. The ripening process which begins during the post-harvest processing ends during the storage of seeds. It runs its course most successfully under conditions of forced ventilation at an air temperature of 15-30°C.

A more prolonged heating effect under conditions of forced ventilation accelerates ripening of the grain. This explains the opinion which states that the germinating power of seeds dried in ground-type and rhombic driers is higher than that of seeds dried in shaft and drum driers. However, upon further storage the germinating power and sprouting vigor of seeds processed in different types of driers becomes even, if their seeding quality has not been impaired in the course of processing.

The farms which use shaft and drum driers during the operation process in combination with forced ventilation installations and where regimes of ventilation and drying are rigorously observed always obtain good seeds. On the other hand, farms which try to use the KZS-type complex, without additional equipment necessary for processing seed grains, and which operate it without regulating its mechanisms on the principle of "the grain pours freely, so it is OK," will not obtain seeds of high quality.

Some specialists justify the need to use rhombic driers by the fact that up to 5 percent of seeds are damaged per each bucket chain [noria] of the KZS complex. But at the same time, they forget that in rhombic driers the grain passes through only slightly fewer bucket chains. The point here is not traumatization but observance of technology and the regime of seed grain processing.

The farms of the Pakovskaya Oblast have accumulated much experience in the use of driers of various types.

Since 1963, the "Pobeda" sovkhos, Pakovskiy Rayon, has used two SZPB-2.0 drum driers in series and processes annually 300-350 tons of the first and second sowing standard class seeds.

In this oblast, for drying seed grain, successful use is made of conveyer driers built for processing flax heap. Unlike in the rhombic driers, the grain dries there in a thinner layer, which ensures greater uniformity of its final moisture, and the drying process takes place not periodically but in a line flow.

In 1979, in the "Oktyabr'" sovkhos, Dedovichskiy Rayon, the grain cleaning and drying center, equipped with a conveyor drier with two VPT-400 air heaters and ventilation bins, processed 369 tons of first and second class seeds. The expenditure of worktime for processing a ton of grain amounted only to 0.29 hr.

What are the most typical errors in the operation of driers that bring about a decrease in germinating power of seeds?

The carriages of the shaft driers delivered by the manufacturers are as a rule unadjusted and inclined to this or that side. In order that the grain might uniformly pour over the entire cross section of the shaft the same clearance must be set all over the carriage area. In the case of a small clearance and slow motion,

especially if the drier is set for a small pass, the seeds are heated more. In some areas the heating may exceed the permissible level and the germinating power of seeds will decrease. While trying to achieve a more uniform movement of grain along the section of the shaft it is necessary at the same time to increase its supply to the drier (for SZSh-16 drier to 8-16 ton/hr). After the first pass the seeds must be tempered in a forced ventilation bin.

A frequent error in the operation of drum driers is the lack of control of the grain feed to driers. An insufficient feed, even at a low temperature of the heat carrier, as a rule brings about overheating of grain in the drum and, in the final analysis, a decrease in germinating power. Care should be taken that the feeding of the grain to a drier would correspond to the rated throughput capacity of the latter.

Another error consists in the lack of temperature control of the spent heat carrier at the output of the drum drier. Considering that it is close to the seed heating temperature, its control is the best guarantee for preservation of their sowing qualities.

In SZSB-4.0 driers the normal heat regime is ensured by using a single burner for the two drying drums.

In preparing the factory-made driers for work it is necessary to check their operational readiness, to ensure the reliable mobility of all damper regulators and set them in position in accordance with directions. Special attention should be paid to the condition of thermometers. For drying seeds it is better to use telethermometers.

A decrease in the sowing qualities of the seed grain may occur in the course of processing due to improper storage before drying.

To handle a moist heap, the forced ventilation installations should have holding capacity of not less than 20 percent of the overall gross seed production. In case of insufficient number of BV-25 bins it is necessary to build forced ventilation platforms (the rules for their setting and operation were described in *TEKHNIKA V SEL'SKOM KHOZYAYSTVE* No 11 1979).

The moisture of seeds is equalized in forced ventilation installations. It decreases on the average 1-2 percent a day, and the conditions improve for the seeds' post-harvest ripening. The heating of atmospheric air to 5-6°C accelerates these processes. However, it is necessary at the same time to reduce the thickness of grain layer which reduces productivity.

High temperature and a thick layer of grain may bring about steaming of seeds and an increase in nonuniformity of their moisture. This should be borne in mind especially when drying grain in rhombic driers in which the thickness of the grain layer is considerably greater than in shaft driers.

A careful observance of techniques of the post-harvest processing of high-moisture seed grain permits us to obtain high quality seed with the use of any drying equipment. To service the equipment, one should have specially trained cadres. Therefore, it is necessary to enlist in good time the operators for work in the drying centers and to train them in the proper operation of installations and drying technology, as well as to interest them materially in the final results.

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UDC 621.867.85:664.7

TRANSPORTATION PARAMETERS FOR GRAIN OF VARIOUS MOISTURE LEVELS

MOSEVICH, M. I. and M. A. LEVASHOVA. *TRUDY VUZOVSKOY PROMYSHLENNOSTI*, in Russian No. 8, Aug. 80, pp. 23-26.

Author's address: M. I. Moskvitin, Ye. Imitruk and M. Gorekh; Ukrainian Branch of the All-Union Scientific Research Institute of Combined Fodder Industry (VNIKIPI).

The Ukrainian Branch of the VNIKIPI has carried out investigations with a view to revealing the transportation-related characteristics and regimes of aerodynamic operations in unloading grain with higher moisture content from the storehouses. Investigations were performed using a 9 m long experimental aerobute with a 0.14 m wide work - a part of the air-distribution grid, clear opening = 4.57 percent, and angle of inclination = 0°. The grain being transported was moistened by a liquid-droplet method to 14.0, 17.0, 21.3, 25.9 and 27.8 percent. Experiments on the rate of grain were carried out after its tempering (see Table).

A diagram of the dependence of the mass flow rate of grain on its moisture (Fig. 1), plotted in the form of straight lines, intersecting at a single point outside the diagram, not coinciding with any co-ordinate axis, has made it possible to express the flow rate of grain by the following formula:

$$G = 0.0001P + 0.0001W - 0.0001, \quad (1)$$

where P is static pressure under air-distribution grid, W is grain moisture, and G is flow rate of grain (kg/s).

Table

Flow Rate of Grain at Various Air Pressures

Air pressure, Pa (mm Hg)	Moisture, % (2)				
	14.0	17.0	21.3	25.9	27.8
	Periodic periods, sec. (3)				
0.0	3.07	1.15	1.00	0.95	0.90
1.0	3.30	1.40	1.20	1.10	1.05
2.0	4.30	2.40	2.10	2.00	1.95
3.0	5.30	3.40	3.10	3.00	2.95
4.0	6.30	4.40	4.10	4.00	3.95
5.0	7.30	5.40	5.10	5.00	4.95

Key:

1. Air pressure, Pa (mm Hg);
2. Grain moisture, %;
3. Mean time rate of grain, kg/s.

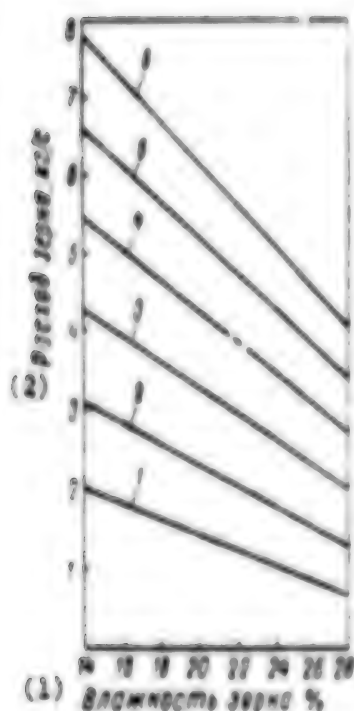


Fig. 1. Dependence of flow rate of grain on its moisture at static pressure under air-distribution grid:

1 - 600 Pa; 2 - 800 Pa; 3 - 1000 Pa;
4 - 1200 Pa; 5 - 1400 Pa;
6 - 1600 Pa

Key:

1. Grain moisture, %
2. Flow rate of grain, kg/s

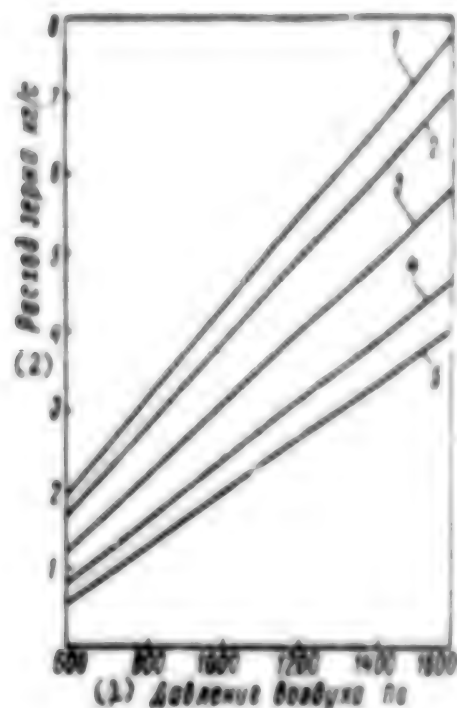


Fig. 2. Dependence of flow rate of grain on air pressure under air-distribution grid, at moisture:

1 - 14.0%; 2 - 17.0%; 3 - 21.3%;
4 - 25.9%; 5 - 27.8%

Key:

1. Air pressure, Pa
2. Flow rate of grain, kg/s

To verify the assumed form of the empirical formula, a diagram of the experimental data has been plotted, where variable H is taken as parameter (Fig. 2), from which it follows that the obtained straight lines are intersecting at a single point, not belonging to any of co-ordinate axes. Consequently, the second diagram has confirmed the correctness of the choice of the general aspect of the empirical formula.

After determination of the values of constants a , b , c , d the formula 2 will take the form:

$$Q = -1.87 \cdot 10^{-4} \cdot H \cdot W + 8.05 \cdot 10^{-4} H + 1.67 \cdot 10^{-4} W - 1.38 \quad (2)$$

Let us determine with the use of this empirical formula the relative calculation error (δ) for any experiment, e.g., $H = 1200$ Pa, $W = 27.8\%$ and $Q = 2.7$ kg/s

$$Q = \frac{1}{2} \cdot 10^{-3} \cdot (200 \cdot 27.3 + 1.05 \cdot 10^{-3}) \cdot \sqrt{1200} \cdot 1.05 \cdot 10^{-3} \cdot 27.3 = 1.48 \cdot 10^{-3} \quad (1a)$$

$$\lambda = \frac{(27.3 + 1.05 \cdot 10^{-3}) \cdot 1000}{2.7} = 1.489 \quad (1b)$$

The error obtained is negligible for practical estimates, and therefore there is no need for a more accurate determination of coefficients.

Now, the aerohute with a working width of $B = 0.15$ m, angle of inclination $\alpha = 17^\circ$, and pressure under air-distribution grid $H = 600-1600$, ensures the transportation of grain with elevated moisture (up to 28 percent). With the increase of moisture of the grain its mass flow rate decreases.

To calculate the mass flow rate of grain through the aerohute as a function of its moisture and air pressure, use can be made of formula 2.

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AGRO-ECONOMICS AND ORGANIZATION

ROLE OF PRIVATE PLOT FARMING STRESSED

Moscow PRAVDA in Russian 4 Feb 80 p 7

[Article by G. Shmelev, Doctor of Economic Sciences: "Reliable Assistance," with commentary by V. Volgin]

[Text] Last summer, following an extended period of time, I visited relatives in Oktyabr'skiy Settlement in Krasnodarskiy Kray. Almost immediately I noted that a change had taken place in the life of a quiet street. A neighbor had rid herself of her cow -- the only one in the district and one which provided milk for many individuals.

By no means was this a singular incident. In many other villages which I happened to visit, I heard others complaining that they had to let go of their cows owing to the fact that they were too difficult to maintain. In a number of regions throughout the country, the herds of long-horned cattle are thinning out. It can be stated directly that there are many causes of this undesirable phenomenon. However, the principal cause is a lack of attention being given to the development of the private plots. And indeed these plots furnish us with a strong portion of our output. How can assistance be furnished to these plots?

Today support for the private plots has become an important trend in the agrarian policies of the CPSU. And a great deal has already been accomplished in this regard. Each year, for example, millions of head of poultry and suckling pigs are sold to the population for raising purposes. This is producing definite results. And many reserves are available in this regard. Here is just one of them.

At the present time, non-pedigree and low productivity large-horned cattle are being raised for the most part on the private plots. Mainly culled out animals are being sold to the kolkhos members. Thus the average milk yields are 450 liters less than those being obtained from public production. If improvements are realized in the pedigree structure of the animals, then for the country as a whole, as borne out by computations, it will be possible to obtain millions of additional tons of milk.

The same holds true for certain orchards, gardens and berry patches. They are characterized by low productivity fruit trees and crops, the quality of which leaves a great deal to be desired. As a result, not only is a portion of the output left unharvested but in addition the land is not utilized properly. Why is this taking place?

It has already been stated that the private plots taken as a whole constitute a large-scale agrarian department of the country. But how many specialists are servicing it? Yes and are there any such specialists generally? It is doubted. It is believed that it would not be out of place to employ the experience of certain fraternal countries. Let us take Hungary for example. Here, in the cooperatives and on goskhozses (state farms), there are more than 1,000 agronomist-experts working in the private economy. In many such organizations there are deputy chairman for the private economy.

However, let us return to Otkyabr'skiy Settlement. Why did the neighbor rid herself of her cow? Perhaps she resolved to live without cares and problems. By no means was this the case. The principal reason -- too many feed problems. Haying land was not being made available. There was no place to graze the cattle during the summer. In short, it was difficult to maintain animals.

A need obviously existed throughout the country for restoring, in a more decisive manner, pastures for the privately owned livestock and for providing the population with haying lands for use on a contractual basis. Such actions will produce positive results. But the problem will hardly be solved completely. Why is this? It is my opinion that in a number of instances we are employing obsolete methods for solving it. True, consideration must be given to the fact that in the case of a household economy cows constitute, among other things, a second work shift for their owners. And it bears mentioning that this is by no means an easy shift. Nor is it an alluring or attractive field of endeavor for most individuals, not to mention young people. What is to be done?

It is believed that the contacts existing between the private plots and public farms should be strengthened still further. A need exists for creating and developing cooperation between them in every possible way. Moreover, the initial steps have already been taken in this regard. In Bogucharskiy Rayon of Voronezhskaya Oblast, many kolkhoz members are fattening hogs for kolkhozes and sovkhoses on a contractual basis. In Gor'kovskaya and Penzenskaya oblasti, pensioners are also maintaining kolkhoz sows on their plots on a contractual basis. They are being provided with feed. The farms sell the suckling pigs thus obtained to the kolkhoz members.

In Tatarbunarskiy Rayon of Odesskaya Oblast, cooperation between private and public production has developed mainly in connection with the raising of geese. The kolkhozes supply the kolkhoz members with goslings and provide them with free feed in accordance with definite norms -- at the rate of 2 kilograms for each kilogram of meat to be sold. In turn, the kolkhoz members are obligated to fatten the goslings to a definite weight and to sell 70 percent of the poultry to the farm at the price called for in the agreement. The payments are included in the average annual earnings. Young large-horned cattle stock are being fattened on a similar basis in L'vovskaya and Volynskaya oblasti.

These are believed to be new and effective forms for improving contacts between the private plots and public farms. However, they appeared in large measure owing to independent action carried out in the various areas. They must obviously be studied and employed correctly at the appropriate levels and particularly by Gosplan and the USSR Ministry of Agriculture.

There is still one other problem. The private plots constitute a part of the agroindustrial complex and the development of our entire agricultural system must be evaluated on an overall basis and the dynamics of all of its component parts must be taken into account and planned. Every individual is aware that in the face of an increase in the number of livestock and poultry on the kolkhoses and sovkhoses, no overall increase takes place in the number of livestock or in the production of goods if a similar reduction takes place in the number of livestock and poultry on the private plots of the population. Moreover, there were times when we forfeited goals achieved earlier. For example, during the 1967-1971 period the number of cows in the public sector of agriculture increased by roughly 200,000, while on the private plots of the population -- a reduction of 1.6 million head.

The mentioned fact indicates that a study of the problem of reproduction in agriculture and the scientifically sound planning of its development require a complete and not a selective study of the socio-economic structure of the branch. Thorough studies must also be undertaken of the interrelationships and interdependencies existing within the agroindustrial complex itself, a component part of which is the private economy.

An insufficient study of the private plots and the absence of a long-term program for their development will result in many mistakes being committed. Even at the present time, in addition to branch changes in overall output volume, substantial and as yet poorly studied regional changes are taking place. For example, during the 1971-1973 period and compared to 1966-1970, the production of this output in the Latvian SSR decreased by 11 percent and in the Estonian SSR -- by eight percent, whereas in the Tajik SSR it increased by a factor of 1.5, in the Uzbek SSR -- by one third and in the Turkmen SSR -- by a factor of 1.2, compared to an overall increase of 3-4 percent throughout the country. What is the problem here? Which factors influenced this important process and to what degree? These questions require study.

It is obvious that the interests of the private sector, both in the center and in the various areas, must be represented by definite and competent organs and officials. Committees which operate on a voluntary basis should ideally be created at the kolkhoses and sovkhoses. They should develop recommendations for furnishing diverse types of assistance to the private plots, they should examine those problems concerned with changes in the private utilization of land by a family and boundary disputes, they should furnish assistance to the kolхоз administrations and sovkhos boards of directors in the accounting for and control over the use of the private plots and in determining the feed requirements of the private plots and the correct distribution of the feed and they should organize the tending of the pastures, ensure the protection of the crops and orchards against pests and diseases and display concern for ensuring that the farms are supplied with seed, pedigree young stock and so forth.

Certainly, it is hoped that in each rayon, oblast center and, if possible, even at higher levels, there will be persons specially authorized to work these plots, represent their interests and submit proposals bearing upon their development at the different levels.

True, republic societies (councils) of horticulturists and gardeners have been created during the past few years in the Ukraine and in Lithuania. Kolхоз trade

administrations are operating within the trade ministries of the union republics. Meanwhile, an efficient national system is required. In the absence of such a system, it is difficult to obtain solutions for many tasks. At the present time, for example, hundreds of plants and scores of ministries and departments are concerned with the availability of orchard and garden implements and "light mechanization" equipment. But if you enter a store, you will see how scanty is the selection of such goods. Why is this so? Such products are of third-rate importance to the enterprises. This then explains the disruptions in the production plans for them, the undesirable assortments and the low quality. And the overall result -- the demand for even the simplest tools of agricultural labor is not being satisfied adequately.

In short, the private plots require greater attention, an expansion of their contacts with public production and improved planning for their development.

G. Shmelev

Our Commentary

It is apparent that the authors of published materials possess a good understanding of the social need for private plots. At the same time, they take note of certain undesirable consequences associated with the development of the private economy.

Truly, nobody casts doubt upon the advisability of private plots. In addition to being profitable from an economic standpoint, they also serve as an important source for the production of livestock and crop husbandry products. Thus, statistical data indicate that during 1976 approximately one third of the meat, milk and vegetables and considerable quantities of fruits and vegetables were produced on private plots. An increase in production in this sector does not require large-scale capital investments or additional material and technical resources.

One social factor should not be overlooked. The private plots, for example, increase the income and thus improve the well-being of a definite category of workers. Work performed on the private plots provides many individuals with moral satisfaction. In particular, it has a beneficial effect on children, who from an early age are attracted to physical labor and to maintaining close contact with nature.

Beyond any doubt, this is all of great importance and thus the party and state are devoting a great amount of effort towards providing support for the private farms.

However, one cannot help but take note of a number of negative aspects, mentioned by our authors in their writings. What are the sources of these aspects?

First of all, it is believed that an answer should be provided for a question that is of great interest to many readers -- why is it that rather large quantities of products are produced in the private economy on comparatively small areas? A simple explanation is all that is needed. The fact of the matter is that the private plots are based to a considerable degree upon public production. The kolkhozes and sovkhoses supply the plots with the young livestock, poultry and feed required, they provide the necessary transport vehicles, they lend assistance quite often in tilling the plots and so forth. Moreover, a great amount of work is carried out at

times on a preferential basis or free of charge. Thus a tremendous amount of public labor is embodied in the output of the private plots.

And what use is being made of the products of the private plots? First of all, they are being used to satisfy personal needs, with the surplus products being sold on the local market. However, when the private plots of a number of owners become more commercial in nature, undesirable phenomena may arise which to a certain degree will be associated with the formation of unjustifiably high income.

How can such phenomena arise? Indeed, it is well known that the private plots do not possess any advantages over the public farms. Moreover, labor productivity on the private plots is incomparably lower. The advantages derive from other factors. One such factor has to do with the fact that the private plots not only are based upon public production, but in fact they parasitize upon the public farms under definite circumstances. Taking advantage of their practically free land and water and obtaining young stock, feed, production equipment, electric power, gas and various services at low prices, many of the plots sell their products at higher market prices. All of this creates favorable conditions for those who strive to raise the marketability of the private sector and to obtain unearned income on this basis.

The facts indicate that certain individuals, including those employed permanently in public production, are redirecting their efforts towards developing the private economy, which is losing its private character. This is inflicting harm upon public production and it is exerting a corrupting influence upon their associates, as borne out in the writings of A. Labyak and O. Gavrilenko.

What is the solution for this situation? This is a difficult question. In attempting to solve it, one must take into account the specific situation. It is obvious, as mentioned by our readers, that use must be made of a flexible system of measures. The existing norms and statutes governing the management of private plots must first of all be observed in a very strict manner in the various areas. At the same time, economic levers capable of preventing the undesirable phenomena from occurring must be developed and placed into active use. The essence of these levers must be such that: 1) the task of increasing the production of goods on the private plots is not undermined, 2) the limits established by law are observed in a very strict manner, 3) society receives back no less than that which it furnished, and 4) all possibilities of unearned income being obtained are eliminated.

Deserving of attention are the proposals for including the private plots in stable cooperation with public production and also those concerned with the development of contractual relationships. A certain amount of experience has already been accumulated in this regard. Many kolkhozes and sovkhoses, on the basis of cooperation with the owners of private plots, are fattening their livestock and poultry, producing other products and organizing the procurement and marketing of such products. The question concerning the creation of appropriate subunits in existing economic organs, which could exercise control over the private plots, analyze the trends in their development and so forth, requires further study.

All of these measures must promote an increase in output production in the private sector and the use of labor reserves, free time and each patch of empty land.

SHORTCOMINGS IN FERTILIZER PRODUCTION AND USE

Moscow ZEMLEDELIE in Russian No 9, Sep 80 pp 19-21

[Article by candidates of economic sciences V. V. Tokarev, Central Scientific Research Institute of Agrochemical Services to Agriculture, and I. A. Potashov, All-Union Scientific Research Institute of Fertilizers and Soil Science imeni D. N. Pryanishnikov: "Improving Mineral Fertilizer Effectiveness"]

[Text] Deliveries of mineral fertilizers to agriculture here are increasing each year. In 1979, they reached 17.7 million tons, converted to nutrients, as against 6.3 million tons in 1965 and 10.3 million tons in 1970. This has permitted increasing the amount of fertilizer applied per hectare of plowed field to 73 kg (actual amount) on average for the country. In the Tajik, Uzbek, Turkmen, Estonian and Belorussian SSR's, the average fertilizer dose per hectare of sown field was more than 200 kg actual amount in 1979. Due to a shortage of fertilizers, the level of mineral fertilizer application remains low in the Kazakh SSR, in a number of oblasts, kraya and autonomous republics of the RSFSR, and in the Ukrainian SSR.

Most fertilizers are applied to such valuable crops as sugar beets, cotton, potatoes and vegetables. Thus, the average fertilizer application norm per hectare sown to cotton in 1979 was 410 kg of nutrients; 451 for sugar beets, 274 for potatoes and 254 for vegetables. Insufficient fertilizer is being applied to grains and fodder crops, orchards and vineyards. Practically no fertilizer is being applied to meadows and pastures.

Deliveries of phosphate fertilizers remain inadequate, as the demand for them has been increasing substantially as grain production has increased in the eastern regions. Nationwide, we have 95 million hectares of plowed land which is low in phosphorus (46 percent of the total). When insufficient phosphate fertilizer is applied to it, the effectiveness of nitrogen-potassium fertilizers decreases.

Fertilizers are the fastest and most effective means of increasing agricultural crop yields. You can convince yourself of this by looking at average annual data on fertilizer application by year for the country as a whole [see chart at top of following page]:

Calculations show that the increment in grain production due to the use of mineral fertilizers averaged 21.1 million tons per year in the Eighth Five-Year Plan, 27.5 million tons in the Ninth, and 32.1 million tons during the first four years of the 10th. The figures were 3.4 million, 4.6 million and 5.1 million tons, respectively, for cotton.

years	grains		cotton	
	yields (in quintals per hectare)	mineral fertilizers per hectare (kg, actual)	yields (in quintals per hectare)	mineral fertilizers per hectare (kg, actual)
1961-1965	10.2	70	20.6	226
1966-1970	13.7	21	24.1	325
1971-1975	14.7	32	27.3	365
1976-1979	16.3	43	28.8	407

The actual increase in grain production needed to recompense the cost of one kilogram of fertilizers (actual weight) on grain crops in 1976-1979 was five kg of grain. This is quite a high indicator and exceeds the calculated normative.

Higher fertilizer effectiveness was achieved in all oblasts of the Ukraine, Belorussia, Kazakhstan, Moldavia and Lithuania. This was greatly facilitated by the extensive introduction of progressive methods of fertilizer application.

The fertilizing of grain crops in nonchernozem regions with comprehensive chemization yields good results. Thus, average annual application of fertilizers per hectare of plowed field in Suzdal'skiy Rayon, Vladimirskaya Oblast, was 49 kg (actual) in 1964-1966, 115 kg in 1967-1970, 190 kg in 1971-1975, and 227 kg in 1976-1977. Grain crop yields were 11.7, 18.6, 23.4 and 32.1 q/ha, respectively. High fertilizer recompensability of cotton yields has been observed in the Uzbek, Kazakh, Azerbaijan and Kirghiz SSR's.

The effectiveness of fertilizers on grains planted on fallow land in Central Asia is inadequate.

The effectiveness of mineral fertilizers on vegetable crops is low. Thus, the average annual norm for fertilizer application for vegetables is growing substantially, but vegetable yields are increasing insignificantly. On average for the country, the increased vegetable yield needed to recompense the cost of one kilogram of fertilizer nutrients was 13 kg in 1971-1975 but 14 kg in 1976-1979, that is, considerably less than the normative.

Average annual fertilizer use on potatoes has increased nationwide from 145 kg (actual) per hectare sown in 1966-1970 to 280 kg in 1976-1979, but yields have practically remained at the same level: 94 and 100 q/ha. Belorussia, Estonia, Lithuania and the Ukraine obtained the best indicators for fertilizer recompensability for potatoes.

One basic reason for low fertilizer recompensability in the case of sugar beets, potatoes and vegetables is the failure to observe scientifically substantiated ratios among the basic fertilizer nutrients. Thus, during the first three years of the 10th Five-Year Plan, the ratio of nitrogen, phosphorous and potassium applied to sugar beets was 1:0.7:1 nationwide (instead of the 1:1:1 recommended by science); for the Ukraine, 1:0.6:1 (given a recommended ratio of 1:1:0.9), and for Latvia and Belorussia, 1:0.8:1.4 (given a recommended ratio of 1:0.8:1.1). The discrepancies are similar for other crops as well. This is due basically to the shortage of phosphate fertilizers.

The decreased effectiveness of mineral fertilizers in a number of republics, krais and oblasts is also linked to the fact that sown areas are significantly overgrown with weeds due to the shortage of herbicides and due to the failure to follow standard farming practices.

The use of fertilizers is highly effective only when the entire agrocomplex is observed, when the soil is adequately cultivated.

At present, the coefficient of fertilizer use nationwide averages 50-60 percent for nitrogen fertilizers, 60-70 percent for potassium fertilizers and 20-30 percent for phosphate fertilizers the first year, 40-50 percent taking residual effect into account. The task of raising the use coefficient for phosphate fertilizers is especially critical. This problem must be solved by agrotechnical and agrochemical measures (especially through local application) and by improving the quality of the fertilizers being produced.

Increasing the use coefficient for nitrogen fertilizers is possible if we use inhibitors, which delay the breakdown and fixation of fertilizers in the soil, and if we cover the granules with polymer film. Experimental lots of such fertilizers are now being obtained.

A significant amount of the fertilizer being delivered to agriculture does not correspond to state standards and specifications. Some fertilizers tend to cake during shipment and granulated fertilizers are often produced with uneven granule sizes and, moreover, with granules of inadequate stability. These and other shortcomings in fertilizer quality lead to great difficulties in using them and cause fertilizer losses, uneven distribution in the soil and, in the end, a reduction in their effectiveness.

Fertilizer industry enterprises must take effective steps to meet the requirements of the All-Union State Standards and the specifications for output they produce. It is very important to accelerate the release of fertilizers, including complex ones with higher nutrient contents. This will lead to a big reduction in expenditures on shipping, storing and applying fertilizers.

The organization of dry fertilizer mixing on the farms is an important means of increasing fertilizer effectiveness, but to do this, we need special machines whose production is planned for 1981-1985.

Calculations show that preparing mixed fertilizers on the farms and subsequently using them can yield an impact equal to the use of commercial complex fertilizers. For several methods, application of the necessary doses of fertilizers is 30-40 percent cheaper than applying the same fertilizers in the form of a prepared mixture.

At present, along with concentrated and complex solid fertilizers, we are also using liquid forms, among which the most promising and economical is anhydrous ammonia. In 1979, some 121,000 tons of it was delivered to agriculture. The application of anhydrous ammonia is most profitable and promising for high doses of nitrogen.

Experience on farms in Moscow, Voroshilovgradskaya, Cherkasskaya and other oblasts has shown that operating expenses are 30-35 percent lower when anhydrous ammonia is used than when ammonium nitrate is used. The economy is achieved due to the comparatively low price of liquid fertilizers. In the averaged indicators calculated by

the VINA [All-Union Scientific Research Institute of Fertilizers and Soil Science] and VNIPIagrokhim [All-Union Scientific Research and Planning Institute of Agricultural Chemistry], operating outlays to use one ton of ammonium nitrate nitrogen are 203 rubles, and to use one ton of anhydrous ammonia nitrogen -- 165 rubles.

It is most appropriate to use anhydrous ammonia on farms near plants producing or using this product, as well as near those obtaining it directly from ammonia pipelines.

On a number of farms of Krasnodarskiy Kray, considerable experience has been accumulated in using a saltpeter or urea melt. Operating outlays on delivering, storing and applying the melt do not exceed 12-15 rubles per ton of nitrogen (according to data from the Armavir Experimental Station of the VIM [All-Union Scientific Research Institute of Agricultural Mechanization]). The broader application of melts and complex liquid fertilizers requires the series production of vehicles for transporting, loading and applying them.

The economic effectiveness of fertilizers depends on how their use is organized. A production check showed that using fertilizers in strict accord with scientific recommendations increases their effectiveness by 15-20 percent.

The unified system of agrochemical service, the Soyuzsel'khozkhimiya association, can and must ensure that this task is carried out.

In the 11th Five-Year Plan, we are faced with creating a modern material and technical base for the agrochemical service, with building bases, warehouses and other facilities for chemization centers adjacent to railroad tracks, with organizing the delivery of fertilizers in the ratios needed by each farm, with introducing into production the most progressive methods of using them.

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